DETAILED ACTION

Response to Amendment

1. The applicant's amendment filed on December 20, 2007 has been considered by the examiner and a new reference Fish (US 6,819,312) is cited for the new claim limitation introduced.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. the claimed invention is directed to non-statutory subject matter. The newly added claim 23-25 refers to a computer readable medium comprising computer code which is nonstatutory matter in view of the applicant's disclosure of the computer readable medium may transmit or carry instructions which direct to an electronic signal in paragraph 43 of specification. In this way the computer readable medium is analyzed to be a signal during transmission which is non-statutory.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 12-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Martin et al. (US Patent: 6,563,487).

As to claim 16 Martin teaches a switch (i.e. entire control device 10) comprising:
a sensor (i.e. the contact sensor for control pad 18) (see Col. 4, Line 27);
an actuator (48) configured to output a haptic effect (i.e. the actuator creates haptic feedback for the pad 18) (see Fig. 2b, Col. 12, Lines 49-65); and

a processor (i.e. the microprocessor of the computer 12) in communication with the sensor and the actuator (i.e. both the sensor and actuator are in communication with the computer 12 microprocessor to receive the input and then outputting appropriate feedback), the processor configured to receive a sensor signal from the sensor, and to cause the actuator to generate a haptic effect based at least in part on the sensor signal (see Fig. 1a, Col. 5, Lines 1-14), wherein the haptic effect comprises a plurality of detents (i.e. the detents are the edges of the pad 18 interacting with the plurality of voice coil 176 which has the effect of containing motion and thereby modifying the feedback) defining a first primary channel (i.e. the up directional channel of control along the Y axis) defined along a second axis (i.e. the Y-axis on pad 18), a first secondary channel (i.e. the diagonal control channel at 45 degree of Y-axis up direction) proximate to the first primary channel, and a second primary channel (i.e. the right directional control channel in the X-axis) proximate to the second

primary channel (i.e. the diagonal control at channel 45 degree of X-axis right direction), the detents configured to substantially constrain movement to one of the first primary channel, the second primary channel, the first secondary channel, or the second secondary channel (i.e. the eight member of extension represent the eight unique channel of movement control of the control pad which are control and allow the output of the feedback for the multiple actuators 176 to function with the detents that restraints the motions of feedback) (see Fig. 6, Col. 4, Lines 14-67).

As to claim 12, Martin teaches the method of claim 16, wherein the switch (18) comprises a circular shape (i.e. the control pad is of circular design) (see Fig. 6, Col. 15, Lines 5-39).

As to claim 13, Martin teaches the method of claim 16, wherein the switch comprises an eight-way switch (i.e. the control pad 18 has eight directions, i.e. the X, Y axis directions and their related diagonal directions) (see Fig. 6, Col. 15, Lines 5-39).

As to claim 14, Martin teaches the method of claim 16, further comprising providing a biasing element (48) proximate to a center of the switch (i.e. the

biasing element is the haptic response actuator 48 which changes z axis movement, which is under the center of the control pad 18) (see Fig. 2, Col. 9, Lines 57-67).

As to claim 15, Martin teaches the method of claim 16, further comprising providing a detent (56) proximate to a radius of the switch (i.e. the control pad 18 has a detent around it in the form of a tab 56 that limits its motion) (see Fig. 2B, Col 12, Lines 37-40).

As to claim 17, Martin teaches the switch of claim 16, further comprising: a third primary channel defined substantially co-axial with the first primary channel (i.e. the channel formed by the down directional key of the directional keypad 18 which can be understood as a channel for the control input that is on the same axis as the first primary channel which is the up direction) disposed about a first axis (Y axis); (see Fig. 6, Col. 4, Lines 14-40);

a fourth primary channel defined substantially co-axial with the second primary channel (i.e. the channel formed by the left directional key of the directional keypad 18 which can be understood as a channel for the control input

that is on the same X-axis as the second primary channel) (see Fig. 6, Col. 4, Lines 14-40);

a third secondary channel defined proximate to the third primary channel (i.e. the diagonal control at channel 45 degree of X-axis down direction) (see Fig. 6, Col. 5, Lines 55-56);

and a fourth secondary channel defined proximate to the fourth primary channel (i.e. the diagonal control at channel 45 degree of X-axis left direction) (see Fig. 6, Col. 5, Lines 55-56).

As to claim 18, Martin teaches the switch of claim 17, wherein the first axis is substantially orthogonal to the second axis (i.e. by definition x and y axis in the Cartesian coordinate system are orthogonal with each other) (see Fig 2a, Col. 12, Lines 17-20).

As to claim 19, Martin teaches the switch of claim 16, wherein the first secondary channel is oblique to the first primary channel (i.e. the first secondary channel can be formed by the movement of the control pad 18 diagonally up and to the right which is oblique to the first primary channel) (see Fig. 6, Col. 5, Lines 55-56);

and the second secondary channel is oblique to the second primary channel (i.e. the second secondary channel can be formed by the movement of the control pad 18 diagonally down and to the left which is oblique to the second primary channel) (see Fig. 6, Col. 5, Lines 55-56).

As to claim 20, Martin teaches the switch of claim 16, wherein the first secondary channel is substantially orthogonal to the first primary channel (i.e. the first secondary channel can be formed by the movement of the control pad 18 horizontally to the right which is orthogonal to the first primary channel) (see Fig. 6, Col. 5, Lines 55-56);

and the second secondary channel is substantially orthogonal to the second primary channel (i.e. the second secondary channel can be formed by the movement of the control pad 18 vertically up which is orthogonal to the second primary channel) (see Fig. 6, Col. 5, Lines 55-56).

As to claim 21, Martin teaches the switch of claim 17, wherein the third secondary channel is oblique to the third primary channel (i.e. the third secondary channel can be formed by the movement of the control pad 18 diagonally up and to the left which is oblique to the third primary channel) (see

Fig. 6, Col. 5, Lines 55-56);

and the fourth secondary channel is oblique to the fourth primary channel (i.e. the fourth secondary channel can be formed by the movement of the control pad 18 diagonally down and to the right which is oblique to the fourth primary channel) (see Fig. 6, Col. 5, Lines 55-56).

As to claim 22, Martin teaches the switch of claim 17, wherein the third secondary channel is substantially orthogonal to the third primary channel (i.e. the third secondary channel can be formed by the movement of the control pad 18 horizontally to the left which is orthogonal to the third primary channel) (see Fig. 6, Col. 5, Lines 55-56);

and the fourth secondary channel is substantially orthogonal to the fourth primary channel (i.e. the fourth secondary channel can be formed by the movement of the control pad 18 vertically down which is orthogonal to the fourth primary channel) (see Fig. 6, Col. 5, Lines 55-56).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-11 and 23-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Fish (US Patent: 6,819,312) in view of Tarr et al. (US Patent: 6,084,587).

As to claim 1, Fish discloses a method comprising: defining a user interface having a plurality of input elements (604) arranged in a matrix configuration (i.e. the 3 x 3 array of haptels 604) (see Fig. 6A, Col. 8, Lines 63- 67);

defining a first cell, the first cell comprising representing a first haptic effect (i.e. since more than one of the haptel can be grouped to together to output a haptic feedback, a cell for this purpose has a parameter for haptic feedback effect) (see Fig. 10, Col. 17, Lines 10-40);

assigning the first cell to a first input element in the matrix configuration (i.e. the step 1012 seek out each haptel to assign them into the cell) (see Fig. 10, Col. 17, Lines 10-40);

assigning the first cell to a second input element in the matrix configuration(i.e. the step 1012 seek out another haptel to assign it into the cell that may include all of the haptels) (see Fig. 10, Col. 17, Lines 10-40);

receiving a sensor signal from a sensor indicating a manipulation of at least one of the first of second input elements (i.e. the control processor 904 examiner the sensor data where both the of the haptel area is contacted by the step 1008) (see Fig. 10, Col. 16, Lines 66-67); and

outputting the first haptic effect based at least in part on the sensor signal (i.e. the haptic feedback effect is outputted back on the user interaction and the processor assigned haptic feedback type) (see Col. 17, Lines 46-60).

However Fish does not explicitly teach a first parameter. Tarr teaches a first parameter (i.e. the parameter can be the coefficient of friction that affect the haptic feedback) (see Fig. 7, Col. 9, Lines 55-61).

Therefore it would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the haptic interaction control of Tarr in the overall haptic control device of Fish in order to add the ability to define a haptic VR space independently of a graphical space to provide greater degree of flexibility. (see Tarr Col. 1, Lines 59-63)

As to claim 23, see discussion of claim 1 above, claim 23 is analyzed as the same as claim I where the only variation is the substitution of a computer program stored in a computer readable medium, and is rejected on the same ground.

As to claim 2, Fish teaches the method of claim 1, further comprising communicating the first cell from a first processor (i.e. computer CPU) to a second processor (904) (i.e. since the haptic control processor 904 must communicate with the received the processes to be outputted) (see Fig. 16, Col.

21 Lines 40-55, Col. 22, Lines 1-13) (see Fish Fig. 6, 7, Col. 9, Line 48-Col. 10, Line 23).

As to claim 3, Fish teaches the method of claim 2, further comprising: defining a second cell (i.e. another area on the haptic grid that represent a virtual object of Tarr), the second cell comprising a second parameter (i.e. another one of the parameters of the sub-construct, for example texture) representing a second haptic effect (i.e. the parameter that factor into how the haptic interactions are applied to the user, when the user interacts with the object in the virtual space, which represents another type of haptic effect) (see Tarr, Fig. 2, Col. 5, Lines 55-65); communicating the second cell from the first processor (i.e. computer CPU) to the second processor (i.e. the control processor of the haptic device 940); and assigning the second cell to a third input element in the matrix configuration (i.e. since the second cell object can be assigned to another haptel 604 in the grid) (see Fish Fig. 6, 7, Col. 9, Line 48-Col. *10,* Line 23).

As to claim 4, Fish teaches the method of claim 3, wherein the first and second cells are defined by the first processor (i.e. the processor of the computer that create the virtual object and processes it and represent it with a haptic feedback) and the first, second, and third input elements are assigned by the second processor (i.e. the control processor 904 assign the haptels to deliver the

haptic feedback for each of the objects) (see Fish Fig. 6, 7, Col. 9, Line 48-Col. 10, Line 23).

As to claim 5, Fish teaches the method of claim 3, wherein the third location is disposed between the first and second input element (i.e. since the haptel grid is show with a 3 x 3 matrix the third location is the middle haptel on the grid) (see Fig. 6A, Col. 8, Lines 63-67).

As to claim 6, Fish teaches the method of claim 1, wherein the matrix configuration comprises a square shape (i.e. since the haptel grid is show with a 3 x 3 matrix in a square shape) (see Fig. 6A, Col. 8, Lines 63-67).

As to claim 7, Tarr teaches the method of claim 1, wherein the matrix configuration comprises a circular shape (i.e. the matrix, a higher level object can be circles which can be implemented as a plurality of haptels arrange in a circular shapes) (see Tarr Col. 6, Lines 6-7).

As to claim 8, Tarr teaches the method of claim 1, wherein the first cell comprises a first detent and the second cell comprises a second detent (since during a collision with the cells (sub-constructs) the user are prevented from

penetrate the object, the cell comprises detent that allow limitation of user movement in the virtual space) (see Tarr Cot 7, Lines 20-34)

As to claim 9, Fish teaches the method of claim 3, further comprising providing an actuator (i.e. any one of the moving assembly 100 affect all of the other haptels and are controlled together) in communication with the first, second, and third input element (i.e. since the haptic feedback grid is coordinate by the computer CPU to express complex haptic interactions each of the actuator 100 are communication with the surface sensor relevant to each of the three haptels and controlled together) (see Fish Fig. 1, 6A, Col. 9, Lines 1-45, Col. 10, Lines 7-60).

As to claim 10, Fish teaches the method of claim 2, wherein the second processor is disposed remotely from the first processor (i.e. the processor is capable of communicating RS-232 cable means that they are remotely connected to operate) (See Fish Fig. 7, Col. 10, Lines 7-25).

As to claim 11, Tarr teaches the method of claim 1, wherein the first cell comprises an arc and first and second edges (i.e. since the virtual object can be

a sum of various other sub-construct object such as a line or shapes) (see Fig. 1-3, Col. 5, Lines 40-55, Col. 6, Lines 1-23);

and wherein the haptic effect comprises a plurality of force vectors within the first cell, the force vectors directed outward from a centerline of the first cell toward the first and second edges (i.e. the various parameter that is able to be assigned to the objects such as viscosity and acceleration are force vectors, since during the user interactions these elements direct the forces that is applied the user; also since the force must be applied from a point in the virtual space the object in virtual space when interacting with the user will direct force in a radial manner from a give point) (see Col. 5, Lines 55-65)

As to claim 24, Fish teaches the computer-readable medium of claim 23, further comprising program code for communicating the first cell from a first processor to a second processor (i.e. the processor is capable of communicating RS-232 cable means that they are remotely connected to operate) (See Fish Fig. 7, Col. 10, Lines 7-25).

As to claim 25, Fish teaches The computer-readable medium of claim 24, further comprising: program code for defining a second cell, the second cell

comprising a second parameter representing a second haptic effect; program code for communicating the second cell from the first processor to the second processor; and program code for assigning the second cell to a third input element in the matrix configuration (i.e. since the haptel grid functions together to form a virtual grid of feedback the various underlying effect is created by the computer generated cell of haptel feedback zone which requires the both processor be driven together for multiple feedback) (see Fish, Col. 17, Lines 1-25).

Response to Arguments

8. Applicant's arguments with respect to claims 1-22 have been considered but are moot in view of the new ground(s) of rejection.

9. Applicant's arguments filed December 20, 2007 have been fully considered but they are not persuasive. The applicant argues regarding claim 16-22, that Martin does not teach "a processor configured to cause the actuator to generate haptic effect". The examiner disagrees on the above points, since Martin clearly shows a computer 12 that controls the haptic feedback device. Since the game controller 14 relies on the computer 12 to output the type of haptic feedback processes is driven by

the computer, which itself must be configured in the memory to complete such output function. Therefore the prior art Martin does indeed teach the cited limitations.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Calvin Ma whose telephone number is (571) 270-1713. The examiner can normally be reached on Monday - Friday 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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November 24, 2008

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